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The impact of maternal anemia on maternal and fetal outcome

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Abstract

Introduction: Anemia is a major public health problem affecting both developed and developing countries. According to the World Health Organization, the prevalence of anemia among pregnant women in developed countries is approximately 14 percent, whereas it remains as high as 51 percent in the developing world. Anemia in pregnancy is called a “potential danger to mother and child” to be taken seriously by all parties involved in health care at the forefront line.

Objectives

1. To assess the impact of maternal anemia on maternal outcome.
2. To assess the impact of maternal Anemia on fetal outcome.
3. To compare the maternal and fetal outcome.

Methods and Material: The quantitative research approach was used and the research design was cross sectional descriptive research design. This study was conducted in postnatal ward in selected hospital of the city. In this study the target population was postnatal anemic mother admitted in selected hospital of the city. The sample size was 196 and the sampling technique was purposive sampling technique.

Results: Maternal outcome: Majority of postnatal anemic mother is affected by digestive problems 18.36%, oligohydramnios 14.28, had poor weight gain 12.75% and mother affected by UTI 15.30%, PIH 10.20%, predispose to infection were 11.22%, respiratory problems 12.24%, and maternal palpitation 5.61%. Maternal outcome during labor. Majority of postnatal anemic mother is affected by PIH 16.32%, cesarean section 16.32%, Preterm labor 12.24%, premature rupture of membranes 8.16%, had blood transfusion 6.12%, cardiac failure 1.5%, placental abruption 0.51%.

Fetal outcome: Majority had neonatal jaundice 11.73%, admitted in NICU 16.32% neonatal asphyxia 14.28%, IUGR 10.71%, LBW 17.85%, Newborn anemia 1.02% and still birth 1.02%. The Association between Maternal Outcome Score and Fetal Outcome Score was highly significant as the chi square and p value was $\chi^2 = 13.27$ $P = 0.013$ Significant.

Conclusion: The study concludes that, there has been impact of maternal anemia on maternal and fetal outcome. A high prevalence of anemia in pregnant women apparently increases the maternal and fetal risks. To improve maternal and fetal outcome, it is recommended that the primary health care has to be strengthened, prevention, early diagnosis, and treatment of anemia in pregnancy to be given priority.

Keywords: Maternal anemia, impact, maternal and fetal outcome

Introduction

According to ICMR, the relative prevalence of mild, moderate, and severe anaemia are 13%, 57%, and 12%, respectively, in India. The frequency of anaemia during pregnancy depends primarily on pre-existing iron states and prenatal supplementation. It is more common among indigent women and is influenced by dietary customs. The role of adequate diet and optimal pre-pregnancy nutritional status needs to be emphasized in women of childbearing age, particularly since pregnancy may be too short a period of time in which to reduce pre-existing anaemia.

The World Health Organization (WHO) states that the prevalence of anaemia among pregnant women varies from 14% in developed countries to 65%-75% in India. In women, anaemia may become the underlying cause of maternal mortality and perinatal mortality. Haemoglobin value < 11 g/dL is defined as anaemia in pregnancy by WHO. Anaemia in pregnancy can be further divided as mild, moderate and severe anaemia for haemoglobin level 10.0-10.9 g/dL, 7-9.9 g/dL and severe < 7 g/dL. Various studies showed an association between anaemia and maternal mortality.

Apart from maternal mortality, anaemia in pregnancy may result in intrauterine growth retardation, low birth weight, still-birth, and neonatal death.

Need of the study

Anaemia is the most common complication in pregnant mothers in developing countries not only because of its high incidence but also because of its severity. WHO- UNICEF collaboration survey in developing countries and ICMR studies in Indian context revealed that out of the total women suffering from anemia 2/3 are pregnant and lactating mothers. Anemia of pregnancy is mainly nutritional-iron, folate and B12 deficiency; most commonly due to non-availability of correct food and food taboos and cooking customs. Studies reveal that socioeconomic, cultural factors influence diet during pregnancy which is attributed to poor purchasing power, illiteracy, ignorance regarding nutritive value of readily available cheaper foodstuffs, cultural taboos, superstition and large family. Factors like chronic illness, hemorrhage, short birth intervals, parity will also influence the prevalence of anemia during pregnancy. Severe forms of anemia in third trimester of pregnancy are invariably associated with cardiac failure, 20% deaths, and low birth weight, prematurity, perinatal and infant mortality. The World Health organization has set six targets to be accomplished by the year 2025. Among the targets is a 50% reduction of anemia in women of reproductive age through several strategies such as food fortification with iron, folic acid, and other micronutrients, distribution of iron-containing supplements, control of infections and malaria. Previous studies suggest that associated factors for anemia in pregnancy vary between and within regions. Since anemia is reported to be number one among all cases that attend the maternity services in hospital, there is a need to address the problem and assess the maternal and fetal outcome among anemic pregnant mothers.

AIM of the study

The aim of this study was to assess the Impact of anaemia in pregnancy on maternal and fetal outcome.

Research methodology

Objectives

1. To assess the impact of maternal anemia on maternal outcome among postnatal mother.
2. To assess the impact of maternal Anemia on fetal

outcome among postnatal mother.

3. To compare the maternal and fetal outcome among postnatal mother. The quantitative research approach was used and the research design was cross sectional descriptive research design. This study was conducted in postnatal ward in selected hospital of the city. In this study the target population was postnatal anemic mother admitted in selected hospital of the city. The sample size was 196 and the sampling technique was purposive sampling technique. The reliability of the tools for maternal outcome was 0.780 and Fetal outcome was 0.792 which was highly reliable tools.

Results and analysis

Section I: Maternal outcome during antenatal period

Table 1: showing the maternal outcome during antenatal period.

Maternal Outcome Score	frequency	Percentage
Maternal palpitation	11	5.61
Pregnancy induced hypertension	20	10.20
urinary tract infection	30	15.30
Poor Weight Gain	25	12.75
Predispose to infection	22	11.22
respiratory problems	24	12.24
digestive problems	36	18.36
Oligohydramnios	28	14.28

Majority of postnatal anemic mother is affected by digestive problems 18.36%, oligohydramnios 14.28, had poor weight gain 12.75% and mother affected by UTI 15.30%, PIH 10.20%, predispose to infection were 11.22%, respiratory problems 12.24%, and maternal palpitation 5.61%

Table 2: Maternal outcome during labour:

Maternal Outcome Score	frequency	percentage
Preterm labor	24	12.24
Uterine inertia	00	00
Postpartum hemorrhage	10	5.10
Mother is affected by shock	00	00
Placental abruption	01	0.51
Mother is affected by cardiac failure	0	00
Premature rupture of membrane	16	8.16
Cesarean section delivery	36	18.36
Pregnancy induced hypertension	32	16.32
Oligohydramnios	25	12.75
Had blood transfusion	12	6.12
No complications	40	20.40



Fig 1: Complications during labour

The figure shows, Maternal outcome during labor. Majority of postnatal anemic mother is affected by PIH 16.32%, cesarean section 16.32%, Preterm labor 12.24%, premature rupture of membranes 8.16%, had blood transfusion 6.12%, cardiac failure 1.5%, placental abruption 0.51%.

Table 3: Maternal outcome during puerperium period

Puerperium Period	Frequency	Percentage
Maternal palpitation	08	4.08
Sleep difficulties	36	18.36
breathing difficulties	25	12.75
Fainting	11	5.61
Fatigue	47	23.97
Puerperal sepsis	11	5.61
Sub involution of uterus	15	7.65
Poor lactation	30	15.30
Puerperal venous thrombosis	03	1.53
No complications	10	5.10

Maternal outcome during puerperium period - Majority of postnatal anemic mother were affected by fatigue 23.97%, poor lactation 15.30%, sleep difficulties 18.36%, fainting 20.9%, breathing difficulty 12.75%, sub involution 7.65%,

puerperal sepsis 5.61%, maternal palpitations 4.08%, puerperal venous thrombosis 1.53%.

Section III: Frequency distribution fetal outcome among anemic postnatal mothers

Table 4: Majority had neonatal jaundice 11.73%, admitted in NICU 16.32% neonatal asphyxia 14.28%, IUGR 10.71%, LBW 17.85%, Newborn anemia 1.02% and still birth 1.02%.

Fetal Outcome	Frequency	Percentage
Neonatal asphyxia	28	14.28
Fetal Still birth	02	1.02
Fetal IUGR	21	10.71
Fetal death	00	00
Congenital anomalies	04	2.04
Abortion	7	3.57
LBW	35	17.85
New-born Anemia	2	1.02
Neonatal jaundice	23	11.73
Admitted in NICU	32	16.32
No complications	42	21.42

Section IV: Association between Maternal Outcome Score and Fetal Outcome Score

Table 5: Association between Maternal Outcome Score and Fetal Outcome Score. In study fetal outcome the chi square and p value is $\chi^2=13.27$ P=0.013 hence the association is highly Significant.

Maternal Outcome Score	Fetal Outcome Score				Chi-square test & P-value	R
	Normal	Mild (01-03)	Moderate (4-6)	Severe (7-9)		
Normal	21	06	01	00	$\chi^2= 13.27$ P=0.013	S
Mild (01-08)	54	99	01	00		
Moderate (9-16)	01	11	02	00		
Severe (17-25)	00	00	00	00		
Total	76	116	04	00		

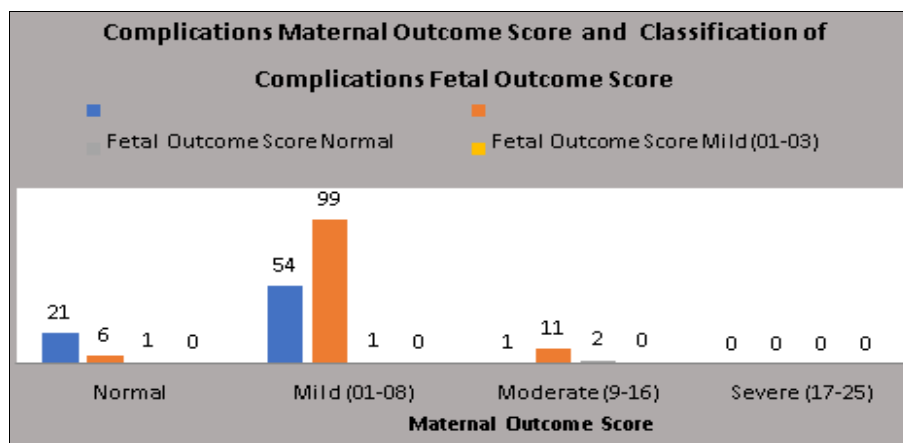


Fig 2: Complications Maternal Outcome Score and Classification of Complications Fetal Outcome Score

Discussion

Anaemia in pregnant women is a health problem worldwide, especially in developing countries. The World Health Organization (WHO) reports that the prevalence of pregnant women experiencing iron deficiency is around 35-75% and increases with gestation. According to the WHO, 40% of maternal mortality in developing countries is related to anaemia during pregnancy, and most anaemia in pregnancy is caused by iron deficiency and acute bleeding. Many studies have indicated that factors such as education, age at marriage, socioeconomic status, poor knowledge, lack of birth spacing, and history of anaemia before pregnancy are significant determinants of anaemia. Another study on

influence of awareness and attitude about anaemia in South India found that, in women in rural areas misconceptions regarding oral iron intake and lack of counselling by health workers were significant predictors of anaemia. Anaemia in pregnancy has adverse effects on maternal and fetal outcomes. The highest prevalence of maternal outcomes in this study was emergency caesarean section (18.36%), PIH 16.32% and Preterm labour 12.24%. The significant fetal outcomes that were associated with maternal anaemia are low birth weight in (17.85%), NICU admissions (16.32%), and Neonatal jaundice 11.73%, which indicates an important need to identify the root causes and risk factors that lead to anaemia in pregnancy. It is

recommended to continue the interventional programs to prevent and treat anaemia, including preconception counselling and antenatal care.

Conclusion

Severe anaemia during pregnancy is associated with adverse maternal and perinatal outcome. It is one of the preventable indirect causes of maternal mortality. Education to adolescents, regular antenatal check-ups, early diagnosis, treatment and prevention. Educating the women regarding safe abortion services available thus avoiding unwanted pregnancies. Promotion of good nutrition practices thus reaching optimum haemoglobin before conception. Along with these active participation of health workers at grass-root level might help in bringing down the prevalence and adverse effects on pregnancy.

This study clarified that anaemia is prevalent among pregnant women particularly mild anaemia. Early diagnosis and treatment at regular antenatal care from first trimester has an essential role in managing maternal anaemia and it reflects directly on the perinatal outcome. Prematurity, low birth weight infants, and postpartum haemorrhage are the commonest maternal and neonatal complications.

Conflict of Interest

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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